CURRENT LITERATURE.

Botanical Directory.

MR. J. DŒRFLER has just issued the *Botaniker-Adressbuch* which we announced last July.[1] It contains 6,455 addresses of botanists, botanical gardens, institutes, societies and periodicals. A considerable number of these have been supplied by the addressees themselves and these are distinguished by an asterisk. On each continent the arrangement is by countries in alphabetic order. The names of botanists and of periodicals of that country are alphabetic in different lists while the gardens, societies and institutes, are arranged by cities. The special department of study is given in addition to the official position (if any) and postal address. Of course it is impossible to say anything as to the general accuracy of such a work. In the United States there are given approximately 1,700 names. We suppose these have been largely compiled from previous directories. Probably one-third of them have no title to place in such a directory, but there are always a considerable number of people so anxious to see their names in print that it is quite impossible to keep them out. However it is better to include too many than to omit those who ought to be included. Among omissions we note in a hasty examination Dr. D. H. Campbell and W. R. Shaw of Leland Stanford Jr. University, W. J. V. Osterhout of Brown University, O. F. Cook of Huntington, N. Y., W. L. Bray and E. B. Uline of Lake Forest University, Prof. W. C. Stevens of University of Kansas. Among our own contributors for 1895 we note the omission of the names of Misses Mary A. Nichols, Ida Clendenin, Bessie L. Putnam, Alice E. Keener, Margaret F. Boynton, Maria L. Owen and Mr. G. H. Shull, most if not all quite as well entitled to insertion as many which appear. Doubtless there are some others. Typographical errors are rather numerous though readily explicable on the "blindness" of poor chirography in proper names. Professor Tracy of Mississippi appears also as Pracy and Mr. Scribner both as Scribner and Lamson-Scribner. "Miss Effie Southworth" still appears in the list and, curiously enough, immediately above Prof. Spalding's name, which she now bears, while Dr. Kellerman is

[1] Dörfler, J.: Botaniker-Adressbuch. Sammlung von Namen und Adressen der lebenden Botaniker aller Länder, der botanischen Gärten, und der die Botanik pflegenden Institute, Gesellschaften, und periodischen Publicationen. Large 8vo, pp. xii + 282. Wien: 1896. Published by the author, Barichgasse 36, Wien III, Austria. $2.40 post free.

entitled "Mrs." Our Teutonic friends do not seem able to compass the English *I* and *J*, which is a fruitful source of error in this list. Nor has the editor appreciated the humor of the young woman who gives her official position as "housekeeper," which he faithfully records. Other errors are due to long survival of names in these directories. Pres. D. S. Jordan, of Stanford University, a zoologist, in 1873 an instructor in botany at Cornell University but scarcely interested for the last twenty years in botany, is listed, as is also Dr. P. S. Baker of De Pauw University, a chemist once giving some attention to plants.

But in spite of errors the directory is a very decided improvement in arrangement, typography, and completeness upon the last one compiled by Wilhelm Engelmann in 1891. And if botanists will take pains to send corrections and additions to the editor, Herr J. Dörfler, Barichgasse 36, Wien III, Austria, these shortcomings can be corrected in the next edition. Mr. Dörfler deserves commendation for the promptness with which he has compiled this list and his energy in publishing it at his own risk. He should be rewarded by a large sale of it.

Minor Notices.

TEACHERS OF BOTANY would do well to consult a lecture by Prof. J. M. Macfarlane, of the University of Pennsylvania, on the organization of botanical museums in high schools, colleges, and universities. This lecture was delivered at the 1894 summer session of the Marine Biological Laboratory at Woods Hole and has recently been issued as a separate from the Biological Lectures for that year published by Ginn & Co.

THE BOTANICAL SEMINAR of the University of Nebraska, whose activity in so many lines is to be commended, published some months ago, in a handsome pamphlet, the address of Dr. John M. Coulter before the seminar on May 27, 1895. Only 363 copies of the address, each numbered, were printed. Dr. Coulter's subject is "The Botanical Outlook" and his address must have been stimulating and suggestive to the energetic body of students to whom it was addressed.

PROFESSOR PENHALLOW has prepared a scheme of classification which has been issued in book form,[1] adapted to the use of students, having space for notes. Five branches are recognized as in Goebel's Outlines, etc., whose subdivisions are given as far as orders, except in angiosperms. An attempt is made to show the chief sexual characters and to keep homologies plain. But the scheme of typography is too intricate to explain by words, though simple enough to understand when seen.

[1] PENHALLOW, D. P.: Outlines of classification of plants. 12×9 inches. 16 pp. Montreal: E. M. Renouf. 1895.

THE FLORA of Pasadena (Cal.) and vicinity[1] is a list of 1056 plants of all groups which have been collected about the city named, chiefly by the author, Prof. McClatchie of Throop Polytechnic Institute. The list is represented by specimens in the herbaria of the author and of the specialists to whom certain groups have been submitted. Sixty-two species are new to science and have been described in the various journals and proceedings cited. The author deserves commendation for his course regarding both these points.

THE SEMI-ANNUAL report of Schimmel & Co. for April, 1896, on essential oils and similar products, both natural and synthetic, again contains much of interest to botanists. The discussion of the citrous oils of lower Italy and Sicily is especially full and is accompanied by a map showing the regions and centers for the production of citron, bergamot, and orange essences. Curiously enough the citron oil which comes from different regions in Sicily has different optical rotatory power, ranging from 59°–61° to 63°–67°. We note also the preparation by Messrs. Schimmel & Co. of synthetic cinnamic aldehyde, the aromatic principle of oil of cinnamon; a synthetic jasmine oil exactly reproducing the unique fragrance of the jessamine; and a synthetic ylang-ylang oil.

A SEPARATE from *Hedwigia* (**35**: 58–72. 1896) contains a supplement to Röll's former paper describing mosses collected by him in the northwestern United States. Unfortunately for American bryologists Mr. Kindberg, who has made so many "new species" has "looked through" Röll's collection and has made a number of new names. We cannot say new species, though they are so labelled. One is thus characterized: "*Philonotis acutiflora* (*sic*) Kindb. sp. n. Perigonialblätter spitz und gerippt." And this when the perigonial leaves of one of its nearest congeners are both pointed and costate! While Mr. Kindberg adds nineteen new names, some of them *nomina nuda*, MM. Renauld and Cardot have only been able to discover four new varieties. There is evidently a difference between being a bryologist and a species-maker.

THE FLORA of West Virginia is one of the most important we have yet to deal with. Its widely varied conditions, its position between the northern and southern floras, its large unexplored territory, all combine to make it an attractive field to botanists. It is a pity that we are compelled so often, for various reasons, to limit our so-called

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[1] MCCLATCHIE, A. J.—Flora of Pasadena and vicinity. Reprinted from Dr. H. A. Reid's History of Pasadena. 8vo. pp. 605–649 figs. 19. The Author: Pasadena, Cal. 1895. 25 cents.

"floras" by arbitrary state boundary lines, but probably that of West Virginia is as nearly natural as any bounded by state lines. The second publication[1] in the botanical series now being issued by the Field Columbian Museum deals with this flora. A brief introduction outlines the botanical history of the state, the special features of the flora, and the forests. The list of species contains 2,584 numbers, 1,095 of which are thallophytes, among which there are 36 new fungi, 123 are bryophytes, 57 are pteridophytes, and 1,309 are spermatophytes. A host index and a list of local plant names conclude the paper. An interesting statement is that West Virginia has a greater amount of hardwood timber in its forests than any other state, and that probably two-thirds of the state is still covered by virgin forests.

ATTENTION should have been earlier directed to the thesis of Miss Grace E. Cooley, presented to the University of Zurich for the doctor's degree, entitled, "On the reserve cellulose of the seeds of Liliaceæ and of some related orders," and published in the *Memoirs* of the Boston Society of Natural History **5**: 1–29. *pl. 6.* Jy. 1895.

Using the term "reserve cellulose" for the material deposited on the walls of the endosperm cells, and not defining it chemically as Reiss has done, Miss Cooley finds that it is present, to the exclusion of reserve starch, in the twenty-eight genera of Liliaceæ, Amaryllidaceæ, and Iridaceæ examined, with the exception of Paris and Trillium; that reserve cellulose is not identical microchemically with pure cellulose, probably consisting of a ground substance identical in all (with the possible exception of Paris and Trillium) with which is associated other substances in small amount giving rise to the slight differences observed in behavior with reagents. In germination it is transformed into oil (starch is only an end product) which is absorbed by the cotyledon. It is laid down as a secondary product upon the walls soon after the endosperm is formed, beginning in the part near the chalaza. The angles thicken first and the sides later. Sugar and oil are present in the cells before the reserve cellulose appears.

MR. W. W. CALKINS has published an account[2] of the lichens of Chicago and vicinity, this being the first of a series of papers concerning the flora of Chicago to be published by the Chicago Academy of Sciences. The author gives a brief account of lichens in general, under

[1] MILLSPAUGH, CHARLES FREDERICK, and NUTTALL, LAWRENCE WILLIAM.—Flora of West Virginia. Field Columbian Museum, Publication 9. Botanical Series, Vol. I, No. 2. Pp. 69–276, with plates and maps. Chicago: January, 1896.

[2] CALKINS, WILLIAM WIRT.—The lichen-flora of Chicago and vicinity. Bulletin No. 1 of the Geol. and Nat. Hist. Surv. of the Chicago Acad. Sci. April, 1896.

the heads: "what are lichens?" "the divisions of lichens;" "the thallus and apothecium—some of their organs;" "the development and progress of the science of lichenology;" "economic uses of lichens." Under the first heading the following quotations may be of interest:

"Lichens are a natural order of aerial plants which are considered as intermediate between Algæ and Fungi, but the limits are still uncertain. All are Thallophytes destitute of stem, leaf, root, or flower, and vegetate under the influence of moisture, obtaining the elements necessary to their growth from the air, and not from their substrates, as do the Fungi."

"In the thallus are green cells called gonidia, and other organs, as spermogonia and pycnidia."

"The thallus supports the apothecium, which is the most important part of the plant."

"There are many organs, all of which must be examined under the microscope, and these have been the subject of profound study and discussion many years, but especially since the microscope came into use. On them many fanciful theories as to the origin of lichens, whether they are autonomous or not, have been built."

"However grand the Schwendener theory, the question of autonomy is still open, while new discoveries are being made which may eventually change the whole aspect of the science."

The 125 forms included are not merely listed, but are briefly described. The bulletin concludes with a bibliography of "North American Lichenology," which is said to be nearly complete, about 120 titles being cited.